

SEQUENCE LISTING

<110> Min, Kyung-Tai
Benzer, Seymour

<120> METHODS AND COMPOSITIONS FOR MODULATING
NEURODEGENERATION

<130> 06618-367001

<140> US 09/418,963

<141> 1999-10-14

<150> US 60/104,298

<151> 1998-10-14

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<170> FastSEQ for Windows Version 4.0

<210> 1

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<212> DNA

<213> *Drosophila melanogaster*

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acgccgtaga aacaccaaac tagttaatta tccttgcaac atg tcc acg ata gac	175
Met Ser Thr Ile Asp	
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gcg ctc tac aat cgt cct ggg ccc aac cgc ctg cgg cag gcg gat gcc	223
Ala Leu Tyr Asn Arg Pro Gly Pro Asn Arg Leu Arg Gln Ala Asp Ala	
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tat cgc acc acc aat cgt cag gat gcc gtc aag att cgt atg gcc aag	271
Tyr Arg Thr Thr Asn Arg Gln Asp Ala Val Lys Ile Arg Met Ala Lys	
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gat gga atc ggc gca gag gag ccc atc tcc gtg ccc ggc ctg ctg aag	319
Asp Gly Ile Gly Ala Glu Glu Pro Ile Ser Val Pro Gly Leu Leu Lys	
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cgt acg gtc aac aat tat ggc gac tat cct gcg ctg cgc acc aag aac	367
Arg Thr Val Asn Asn Tyr Gly Asp Tyr Pro Ala Leu Arg Thr Lys Asn	
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ggc aag aac gga tat cac act gtc acc tac aaa caa tat gag cag aag	415
Gly Lys Asn Gly Tyr His Thr Val Thr Tyr Lys Gln Tyr Glu Gln Lys	
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gtg cac cag gtg gcc aag gcg ttc att aag ctc ggt ctg gag gag cac Val His Gln Val Ala Lys Ala Phe Ile Lys Leu Gly Leu Glu Glu His 90 95 100	463
cat tcg gtg ggt gtg ctg gcc ttc aat tgc gcc gaa tgg ttc tac tcg His Ser Val Gly Val Leu Ala Phe Asn Cys Ala Glu Trp Phe Tyr Ser 105 110 115	511
gcc atg ggc gcc att cac gca cga ggc atc atc gcc gga atc tac acc Ala Met Gly Ala Ile His Ala Arg Gly Ile Ile Ala Gly Ile Tyr Thr 120 125 130	559
acc aat tcc gcc gat gca gtg cag cac gtt ctg gag agc tca cat gcc Thr Asn Ser Ala Asp Ala Val Gln His Val Leu Glu Ser Ser His Ala 135 140 145	607
caa atc gtg gtc gtc gac gac gcc aag caa atg gac aag att cac gcc Gln Ile Val Val Val Asp Asp Ala Lys Gln Met Asp Lys Ile His Ala 150 155 160 165	655
att cgc gac aag ctg ccc aag ctc aag gcc gcc att cag atc cag gag Ile Arg Asp Lys Leu Pro Lys Leu Lys Ala Ala Ile Gln Ile Gln Glu 170 175 180	703
ccc tat tcc ccc tac ttg aag aag gag gat ggc tac tac agg tgg tcg Pro Tyr Ser Pro Tyr Leu Lys Lys Glu Asp Gly Tyr Tyr Arg Trp Ser 185 190 195	751
gag atc gag tcg atg aac gtt agc gac gtg gag gat cag tac atg acc Glu Ile Glu Ser Met Asn Val Ser Asp Val Glu Asp Gln Tyr Met Thr 200 205 210	799
cgt ttg gag aat gtg gcg atc aac gag tgc tgc tgc ctg gtc tac acc Arg Leu Glu Asn Val Ala Ile Asn Glu Cys Cys Cys Leu Val Tyr Thr 215 220 225	847
tcc gga acg gtg ggc atg ccc aag ggc gtg atg ctc tcc cac gac aac Ser Gly Thr Val Gly Met Pro Lys Gly Val Met Leu Ser His Asp Asn 230 235 240 245	895
atc acc ttc gat gtg cgc ggc atc gtc aag gcc atg gac cgt gtg gtg Ile Thr Phe Asp Val Arg Gly Ile Val Lys Ala Met Asp Arg Val Val 250 255 260	943
gtt ggg gcg gag tcg atc gtc tcc tac ctg cca ctt tcg cac gtg gcc Val Gly Ala Glu Ser Ile Val Ser Tyr Leu Pro Leu Ser His Val Ala 265 270 275	991
gcc cag acc gtg gac att tac acc tgc gcc ttt gtg gcg ggc tgc att Ala Gln Thr Val Asp Ile Tyr Thr Cys Ala Phe Val Ala Gly Cys Ile 280 285 290	1039
tgg ttc gcc gac aag gat gcg ctg aag gga acg ctg gtg aag tcg ttg Trp Phe Ala Asp Lys Asp Ala Leu Lys Gly Thr Leu Val Lys Ser Leu 295 300 305	1087
cag gat gcg cga ccc acg cga ttc atg ggc gtg ccg cgt gtg tac gag	1135

Gln 310	Asp	Ala	Arg	Pro	Thr 315	Arg	Phe	Met	Gly	Val 320	Pro	Arg	Val	Tyr	Glu 325	
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aag Lys	aag Lys	atg Met	ctc Leu	gcc Ala	agc Ser	tgg Trp	gcc Ala	aag Lys	ggc Gly	atc Ile	acg Thr	ctg Leu	aag Lys	cac His	tac Tyr	1231
atg Met	gtg Val	agt Ser	caa Gln	ggc Gly	aag Lys	agc Ser	tcc Ser	ggg Gly	gga Gly	ttc Phe	cgg Arg	tac Tyr	aag Lys	att Ile	gcc Ala	1279
aag Lys	tcg Ser	ctc Leu	atc Ile	atg Met	tcc Ser	aag Lys	gtg Val	aag Lys	cag Gln	gcc Ala	ctg Leu	ggc Gly	ttc Phe	gat Asp	cgc Arg	1327
gtc Val	ctt Leu	aca Thr	ctg Leu	gcc Ala	agt Ser	gcg Ala	gca Ala	gct Ala	ccc Pro	atg Met	tcg Ser	ccg Pro	gag Glu	acg Thr	aag Lys	1375
aag Lys	tac Tyr	ttc Phe	ctc Leu	agt Ser	ctg Leu	gac Asp	cta Leu	aag Lys	att Ile	gtc Val	gat Asp	gcc Ala	ttc Phe	ggc Gly	atg Met	1423
tca Ser	gaa Glu	acg Thr	gcc Ala	ggc Gly	tgt Cys	cac His	acc Thr	atc Ile	tgc Cys	ctt Leu	ccc Pro	gat Asp	tcc Ser	gtg Val	ggt Gly	1471
ctg Leu	aac Asn	aca Thr	atc Ile	ggc Gly	aaa Lys	act Thr	ttg Leu	ccc Pro	ggc Gly	tgc Cys	gag Glu	tcc Ser	aag Lys	ttc Phe	atc Ile	1519
aac Asn	aag Lys	gat Asp	gcc Ala	aac Asn	ggt Gly	cac His	gga Gly	gag Glu	ctg Leu	tgc Cys	atc Ile	cga Arg	gga Gly	cgt Arg	cac His	1567
gtt Val	ttc Phe	atg Met	ggc Gly	tac Tyr	atc Ile	gac Asp	aac Asn	aag Lys	gag Glu	aag Lys	acc Thr	gag Glu	gag Glu	tcg Ser	ctg Leu	1615
gat Asp	gac Asp	gac Asp	tgc Cys	tgg Trp	ctg Leu	cat His	tcc Ser	ggt Gly	gat Asp	ttg Leu	gga Gly	ttt Phe	gtg Val	gat Asp	gac Asp	1663
aag Lys	ggt Gly	tat Tyr	gtt Val	tca Ser	ctg Leu	acg Thr	gga Gly	cga Arg	tcc Ser	aag Lys	gag Glu	atc Ile	atc Ile	att Ile	acc Thr	1711
gcc Ala	ggc Gly	ggc Gly	gag Glu	aac Asn	ata Ile	ccg Pro	cca Pro	gtg Val	cac His	atc Ile	gag Glu	aac Asn	acg Thr	atc Ile	aag Lys	1759
aag Lys	gag Glu	ctg Leu	gat Asp	gcc Ala	att Ile	tcc Ser	aat Asn	gcc Ala	ttt Phe	ttg Leu	gtg Val	ggc Gly	gag Glu	cag Gln	cgc Arg	1807

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aaa tat ctc act gtt ctg atc acc cta aag acc gaa gtg gac aag gat			1855
Lys Tyr Leu Thr Val Leu Ile Thr Leu Lys Thr Glu Val Asp Lys Asp			
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tcc ggt gag ccg ctg gac gag ctt agc cac gag tcc tcc gtg tgg gtg			1903
Ser Gly Glu Pro Leu Asp Glu Leu Ser His Glu Ser Ser Val Trp Val			
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aaa tcg ctg gga gtg gag cac aag acc gta tcg gat atc ctg gcc gca			1951
Lys Ser Leu Gly Val Glu His Lys Thr Val Ser Asp Ile Leu Ala Ala			
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ggt ccc tgc ccc aag gtg tgg aag tcc atc gag gat gcc att aag cgg			1999
Gly Pro Cys Pro Lys Val Trp Lys Ser Ile Glu Asp Ala Ile Lys Arg			
	600	605	610
gcc aac aag cag tcc att tcc aat gcc caa aag gtt cag aag ttc acc			2047
Ala Asn Lys Gln Ser Ile Ser Asn Ala Gln Lys Val Gln Lys Phe Thr			
	615	620	625
att ctg ccg cac gac ttc tcc att ccc acc ggc gaa ctt gga ccc acc			2095
Ile Leu Pro His Asp Phe Ser Ile Pro Thr Gly Glu Leu Gly Pro Thr			
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			645
cac cct aaa ggt taagcgcaac gttgtgtcca agatgtatgc cgatgagatc			2147
His Pro Lys Gly			
gagaaactat atgcctagat ttctcactgc aagatcgaaa ccgatgatag ccgcggaact			2207
tgagcttttaa tgtgaatttg aatttaacgg acttccaagc caattgagtg ccacttttaa			2267
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Ile Arg Met Ala Lys Asp Gly Ile Gly Ala Glu Glu Pro Ile Ser Val			
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Pro Gly Leu Leu Lys Arg Thr Val Asn Asn Tyr Gly Asp Tyr Pro Ala			
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Leu Arg Thr Lys Asn Gly Lys Asn Gly Tyr His Thr Val Thr Tyr Lys			
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Gln Tyr Glu Gln Lys Val His Gln Val Ala Lys Ala Phe Ile Lys Leu			
	85	90	95
Gly Leu Glu Glu His His Ser Val Gly Val Leu Ala Phe Asn Cys Ala			
	100	105	110

Glu	Trp	Phe	Tyr	Ser	Ala	Met	Gly	Ala	Ile	His	Ala	Arg	Gly	Ile	Ile	115	120	125
Ala	Gly	Ile	Tyr	Thr	Thr	Asn	Ser	Ala	Asp	Ala	Val	Gln	His	Val	Leu	130	135	140
Glu	Ser	Ser	His	Ala	Gln	Ile	Val	Val	Val	Asp	Asp	Ala	Lys	Gln	Met	145	150	155
Asp	Lys	Ile	His	Ala	Ile	Arg	Asp	Lys	Leu	Pro	Lys	Leu	Lys	Ala	Ala	165	170	175
Ile	Gln	Ile	Gln	Glu	Pro	Tyr	Ser	Pro	Tyr	Leu	Lys	Lys	Glu	Asp	Gly	180	185	190
Tyr	Tyr	Arg	Trp	Ser	Glu	Ile	Glu	Ser	Met	Asn	Val	Ser	Asp	Val	Glu	195	200	205
Asp	Gln	Tyr	Met	Thr	Arg	Leu	Glu	Asn	Val	Ala	Ile	Asn	Glu	Cys	Cys	210	215	220
Cys	Leu	Val	Tyr	Thr	Ser	Gly	Thr	Val	Gly	Met	Pro	Lys	Gly	Val	Met	225	230	235
Leu	Ser	His	Asp	Asn	Ile	Thr	Phe	Asp	Val	Arg	Gly	Ile	Val	Lys	Ala	245	250	255
Met	Asp	Arg	Val	Val	Val	Gly	Ala	Glu	Ser	Ile	Val	Ser	Tyr	Leu	Pro	260	265	270
Leu	Ser	His	Val	Ala	Ala	Gln	Thr	Val	Asp	Ile	Tyr	Thr	Cys	Ala	Phe	275	280	285
Val	Ala	Gly	Cys	Ile	Trp	Phe	Ala	Asp	Lys	Asp	Ala	Leu	Lys	Gly	Thr	290	295	300
Leu	Val	Lys	Ser	Leu	Gln	Asp	Ala	Arg	Pro	Thr	Arg	Phe	Met	Gly	Val	305	310	315
Pro	Arg	Val	Tyr	Glu	Lys	Phe	Gln	Glu	Arg	Met	Val	Ala	Val	Ala	Ser	325	330	335
Ser	Ser	Gly	Ser	Leu	Lys	Lys	Met	Leu	Ala	Ser	Trp	Ala	Lys	Gly	Ile	340	345	350
Thr	Leu	Lys	His	Tyr	Met	Val	Ser	Gln	Gly	Lys	Ser	Ser	Gly	Gly	Phe	355	360	365
Arg	Tyr	Lys	Ile	Ala	Lys	Ser	Leu	Ile	Met	Ser	Lys	Val	Lys	Gln	Ala	370	375	380
Leu	Gly	Phe	Asp	Arg	Val	Leu	Thr	Leu	Ala	Ser	Ala	Ala	Ala	Pro	Met	385	390	395
Ser	Pro	Glu	Thr	Lys	Lys	Tyr	Phe	Leu	Ser	Leu	Asp	Leu	Lys	Ile	Val	405	410	415
Asp	Ala	Phe	Gly	Met	Ser	Glu	Thr	Ala	Gly	Cys	His	Thr	Ile	Cys	Leu	420	425	430
Pro	Asp	Ser	Val	Gly	Leu	Asn	Thr	Ile	Gly	Lys	Thr	Leu	Pro	Gly	Cys	435	440	445
Glu	Ser	Lys	Phe	Ile	Asn	Lys	Asp	Ala	Asn	Gly	His	Gly	Glu	Leu	Cys	450	455	460
Ile	Arg	Gly	Arg	His	Val	Phe	Met	Gly	Tyr	Ile	Asp	Asn	Lys	Glu	Lys	465	470	475
Thr	Glu	Glu	Ser	Leu	Asp	Asp	Asp	Cys	Trp	Leu	His	Ser	Gly	Asp	Leu	485	490	495
Gly	Phe	Val	Asp	Asp	Lys	Gly	Tyr	Val	Ser	Leu	Thr	Gly	Arg	Ser	Lys	500	505	510
Glu	Ile	Ile	Ile	Thr	Ala	Gly	Gly	Glu	Asn	Ile	Pro	Pro	Val	His	Ile	515	520	525
Glu	Asn	Thr	Ile	Lys	Lys	Glu	Leu	Asp	Ala	Ile	Ser	Asn	Ala	Phe	Leu	530	535	540
Val	Gly	Glu	Gln	Arg	Lys	Tyr	Leu	Thr	Val	Leu	Ile	Thr	Leu	Lys	Thr	545	550	555
Glu	Val	Asp	Lys	Asp	Ser	Gly	Glu	Pro	Leu	Asp	Glu	Leu	Ser	His	Glu	560		

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Ser	Ser	Val	Trp	Val	Lys	Ser	Leu	Gly	Val	Glu	His	Lys	Thr	Val	Ser		
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Asp	Ile	Leu	Ala	Ala	Gly	Pro	Cys	Pro	Lys	Val	Trp	Lys	Ser	Ile	Glu		
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Asp	Ala	Ile	Lys	Arg	Ala	Asn	Lys	Gln	Ser	Ile	Ser	Asn	Ala	Gln	Lys		
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Val	Gln	Lys	Phe	Thr	Ile	Leu	Pro	His	Asp	Phe	Ser	Ile	Pro	Thr	Gly		
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Glu	Leu	Gly	Pro	Thr	His	Pro	Lys	Gly									
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Gly	Phe	Lys	Arg	Gln	Asp	Lys	Trp	Glu	His	Ile	Ser	Tyr	Ser	Gln	Tyr		
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Tyr	Leu	Leu	Ala	Arg	Arg	Ala	Lys	Gly	Phe	Leu	Lys	Leu	Gly	Leu			
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Lys	Gln	Ala	His	Ser	Val	Ala	Ile	Leu	Gly	Phe	Asn	Ser	Pro	Glu	Trp		
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Phe	Phe	Ser	Ala	Val	Gly	Thr	Val	Phe	Ala	Gly	Gly	Ile	Val	Thr	Gly		
			85						90					95			
Ile	Tyr	Thr	Thr	Ser	Ser	Pro	Glu	Ala	Cys	Gln	Tyr	Ile	Ala	Tyr	Asp		
			100					105					110				
Cys	Cys	Ala	Asn	Val	Ile	Met	Val	Asp	Thr	Gln	Lys	Gln	Leu	Glu	Lys		
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Ile	Leu	Lys	Ile	Trp	Lys	Gln	Leu	Pro	His	Leu	Lys	Ala	Val	Val	Ile		
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Tyr	Lys	Glu	Pro	Pro	Pro	Asn	Lys	Met	Ala	Asn	Val	Tyr	Thr	Met	Glu		
145					150					155					160		
Glu	Phe	Met	Glu	Leu	Gly	Asn	Glu	Val	Pro	Glu	Glu	Ala	Leu	Asp	Ala		
			165						170					175			
Ile	Ile	Asp	Thr	Gln	Gln	Pro	Asn	Gln	Cys	Cys	Val	Leu	Val	Tyr	Thr		
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Ser	Gly	Thr	Thr	Gly	Asn	Pro	Lys	Gly	Val	Met	Leu	Ser	Gln	Asp	Asn		
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Ile	Thr	Trp	Thr	Ala	Arg	Tyr	Gly	Ser	Gln	Ala	Gly	Asp	Ile	Arg	Pro		
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Ala	Glu	Val	Gln	Gln	Glu	Val	Val	Val	Ser	Tyr	Leu	Pro	Leu	Ser	His		
225					230					235					240		
Ile	Ala	Ala	Gln	Ile	Tyr	Asp	Leu	Trp	Thr	Gly	Ile	Gln	Trp	Gly	Ala		
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Gln	Val	Cys	Phe	Ala	Glu	Pro	Asp	Ala	Leu	Lys	Gly	Ser	Leu	Val	Asn		
		260						265					270				
Thr	Leu	Arg	Glu	Val	Glu	Pro	Thr	Ser	His	Met	Gly	Val	Pro	Arg	Val		
		275					280					285					
Trp	Glu	Lys	Ile	Met	Glu	Arg	Ile	Gln	Glu	Val	Ala	Ala	Gln	Ser	Gly		
	290					295					300						
Phe	Ile	Arg	Arg	Lys	Met	Leu	Leu	Trp	Ala	Met	Ser	Val	Thr	Leu	Glu		

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 Gln Asn Leu Thr Cys Pro Gly Ser Asp Leu Lys Pro Phe Thr Thr Arg
 325 330 335
 Leu Ala Asp Tyr Leu Val Leu Ala Lys Val Arg Gln Ala Leu Gly Phe
 340 345 350
 Ala Lys Cys Gln Lys Asn Phe Tyr Gly Ala Ala Pro Met Met Ala Glu
 355 360 365
 Thr Gln His Phe Phe Leu Gly Leu Asn Ile Arg Leu Tyr Ala Gly Tyr
 370 375 380
 Gly Leu Ser Glu Thr Ser Gly Pro His Phe Met Ser Ser Pro Tyr Asn
 385 390 395 400
 Tyr Arg Leu Tyr Ser Ser Gly Lys Leu Val Pro Gly Cys Arg Val Lys
 405 410 415
 Leu Val Asn Gln Asp Ala Glu Gly Ile Gly Glu Ile Cys Leu Trp Gly
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 Arg Thr Ile Phe Met Gly Tyr Leu Asn Met Glu Asp Lys Thr Cys Glu
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 Ala Ile Asp Glu Glu Gly Trp Leu His Thr Gly Asp Ala Gly Arg Leu
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 Asp Ala Asp Gly Phe Leu Tyr Ile Thr Gly Arg Leu Lys Glu Leu Ile
 465 470 475 480
 Ile Thr Ala Gly Gly Glu Asn Val Pro Pro Val Pro Ile Glu Glu Ala
 485 490 495
 Val Lys Met Glu Leu Pro Ile Ile Ser Asn Ala Met Leu Ile Gly Asp
 500 505 510
 Gln Arg Lys Phe Leu Ser Met Leu Leu Thr Leu Lys Cys Thr Leu Asp
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 Pro Asp Thr Ser Asp Gln Thr Asp Asn Leu Thr Glu Gln Ala Val Glu
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 Phe Cys Gln Arg Val Gly Ser Arg Ala Thr Thr Val Ser Glu Ile Ile
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 Glu Lys Lys Asp Glu Ala Val Tyr Gln Ala Ile Glu Glu Gly Ile Arg
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 Arg Val Asn Met Asn Ala Ala Ala Arg Pro Tyr His Ile Gln Lys Trp
 580 585 590
 Ala Ile Leu Glu Arg Asp Phe Ser Ile Ser Gly Gly Glu Leu Gly Pro
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<212> PRT

<213> Rattus norvegicus

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 Phe Leu Gln Leu Ala Asn Met Ala Arg Gln Val Arg Ser Tyr Arg Gln
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 Arg Arg Pro Val Arg Thr Ile Leu His Val Phe Leu Glu Gln Ala Arg
 50 55 60
 Lys Thr Pro His Lys Pro Phe Leu Leu Phe Arg Asp Glu Thr Leu Thr

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Tyr	Ala	Gln	Val	Asp	Arg	Arg	Ser	Asn	Gln	Val	Ala	Arg	Ala	Leu
				85					90					95
Asp	His	Leu	Gly	Leu	Arg	Gln	Gly	Asp	Cys	Val	Ala	Leu	Phe	Met
			100					105					110	Gly
Asn	Glu	Pro	Ala	Tyr	Val	Trp	Leu	Trp	Leu	Gly	Leu	Leu	Lys	Leu
		115					120					125		Gly
Cys	Pro	Met	Ala	Cys	Leu	Asn	Tyr	Asn	Ile	Arg	Ala	Lys	Ser	Leu
		130				135					140			Leu
His	Cys	Phe	Gln	Cys	Cys	Gly	Ala	Lys	Val	Leu	Leu	Ala	Ser	Pro
145					150					155				Glu
Leu	His	Glu	Ala	Val	Glu	Glu	Val	Leu	Pro	Thr	Leu	Lys	Lys	Glu
				165					170					Gly
Val	Ser	Val	Phe	Tyr	Val	Ser	Arg	Thr	Ser	Asn	Thr	Asn	Gly	Val
			180					185					190	Asp
Thr	Val	Leu	Asp	Lys	Val	Asp	Gly	Val	Ser	Ala	Asp	Pro	Ile	Pro
		195					200				205			Glu
Ser	Trp	Arg	Ser	Glu	Val	Thr	Phe	Thr	Thr	Pro	Ala	Val	Tyr	Ile
	210					215					220			Tyr
Thr	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Ala	Ala	Thr	Ile	Asn	His
225					230					235				His
Arg	Leu	Trp	Tyr	Gly	Thr	Ser	Leu	Ala	Leu	Arg	Ser	Gly	Ile	Lys
				245					250					Ala
His	Asp	Val	Ile	Tyr	Thr	Thr	Met	Pro	Leu	Tyr	His	Ser	Ala	Ala
		260						265					270	Leu
Met	Ile	Gly	Leu	His	Gly	Cys	Ile	Val	Val	Gly	Ala	Thr	Phe	Ala
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Arg	Ser	Lys	Phe	Ser	Ala	Ser	Gln	Phe	Trp	Asp	Asp	Cys	Arg	Lys
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Asn	Ala	Thr	Val	Ile	Gln	Tyr	Ile	Gly	Glu	Leu	Leu	Arg	Tyr	Leu
305					310				315					Cys
Asn	Thr	Pro	Gln	Lys	Pro	Asn	Asp	Arg	Asp	His	Lys	Val	Lys	Ile
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Leu	Gly	Asn	Gly	Leu	Arg	Gly	Asp	Val	Trp	Arg	Glu	Phe	Ile	Lys
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Val	Glu	Lys	Asp	Glu	Pro	Val	Arg	Asp	Ala	Asn	Gly	Tyr	Cys	Ile
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Val	Pro	Lys	Gly	Glu	Val	Gly	Leu	Leu	Ile	Cys	Lys	Ile	Thr	Glu
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Thr	Pro	Phe	Phe	Gly	Tyr	Ala	Gly	Gly	Lys	Thr	Gln	Thr	Glu	Lys
		435					440					445		Lys
Lys	Leu	Arg	Asp	Val	Phe	Lys	Lys	Gly	Asp	Val	Tyr	Phe	Asn	Ser
	450					455					460			Gly
Asp	Leu	Leu	Met	Ile	Asp	Arg	Glu	Asn	Phe	Ile	Tyr	Phe	His	Asp
465					470					475				Arg
Val	Gly	Asp	Thr	Phe	Arg	Trp	Lys	Gly	Glu	Asn	Val	Ala	Thr	Thr
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Val	Ala	Asp	Ile	Val	Gly	Leu	Val	Asp	Phe	Val	Glu	Glu	Val	Asn
			500					505					510	Val
Tyr	Gly	Val	Pro	Val	Pro	Gly	His	Glu	Gly	Arg	Ile	Gly	Met	Ala
		515				520						525		Ser

Ile	Lys	Met	Lys	Glu	Asn	Tyr	Glu	Phe	Asn	Gly	Lys	Lys	Leu	Phe	Gln
	530					535					540				
His	Ile	Ser	Glu	Tyr	Leu	Pro	Ser	Tyr	Ser	Arg	Pro	Arg	Phe	Leu	Arg
545					550					555					560
Ile	Gln	Asp	Thr	Ile	Glu	Ile	Thr	Gly	Thr	Phe	Lys	His	Arg	Lys	Val
				565					570					575	
Thr	Leu	Met	Glu	Glu	Gly	Phe	Asn	Pro	Ser	Val	Ile	Lys	Asp	Thr	Leu
			580					585					590		
Tyr	Phe	Met	Asp	Asp	Thr	Glu	Lys	Thr	Tyr	Val	Pro	Met	Thr	Glu	Asp
		595					600					605			
Ile	Tyr	Asn	Ala	Ile	Ile	Asp	Lys	Thr	Leu	Lys	Leu				
	610					615					620				